

DRILLING LOG		DIVISION		INSTALLATION <i>MCB Camp Lejeune</i>		SHEET OF 1 SHEETS	
1. PROJECT <i>Geoprobe soil sampling inside Bldg 25</i>				10. SIZE AND TYPE OF BIT <i>1" & 1 3/4" ID Core barrel</i>			
2. LOCATION (Coordinates or Station)				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
3. DRILLING AGENCY <i>FUGRO</i>				12. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe</i>			
4. HOLE NO. (As shown on drawing title and file number) <i>IRBB-IS29</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED		UNDISTURBED <i>2</i>	
5. NAME OF DRILLER <i>Frank Word</i>				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER <i>~ 8 ft BGS</i>		16. DATE HOLE	
7. THICKNESS OF OVERBURDEN				STARTED <i>11-22-97 @ 0825</i>		COMPLETED <i>11-22-97</i>	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE			
9. TOTAL DEPTH OF HOLE <i>20 ft</i>				18. TOTAL CORE RECOVERY FOR BORING %			
				19. SIGNATURE OF INSPECTOR <i>Fred Holmer DE & S Geologist</i>			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
2						
4						
6						
8			8.0 f. SAND, moist on top, then wet, firm, tan, grading to lt gray	75%	IS29-01 8-9'	Hnu 58 170 250 120 Strong hydrocarb smell
10		NR				
12						
14						
16						
18			~18.0 f. to v.f. SAND, minor silt, wet, firm, gray, sparse peat	50%	IS29-02 ~18.8'	Hnu 300 260 260 200 * * free-phase DNAPL observed in voids (~1/8")
20			18.9 grading to CLAY, variable silt content, low-med plast, med-dk gray soft TD @ ~19.8			

DRILLING LOG		DIVISION		INSTALLATION <i>MCB Camp Lejeune</i>		SHEET 1 OF 1 SHEETS	
1. PROJECT <i>Geoprobe Soil Sampling inside Bldg 25</i>				10. SIZE AND TYPE OF BIT <i>1" & 1 3/4" dia core barrel</i>			
2. LOCATION (Coordinates or Station)				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
3. DRILLING AGENCY				12. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe</i>			
4. HOLE NO. (As shown on drawing title and file number) <i>IR88-1S30</i>				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED	
5. NAME OF DRILLER <i>Frank Ward</i>				14. TOTAL NUMBER CORE BOXES		UNDISTURBED <i>2</i>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER			
7. THICKNESS OF OVERBURDEN				16. DATE HOLE		STARTED <i>11-22-97 @ 1030</i>	
8. DEPTH DRILLED INTO ROCK				17. ELEVATION TOP OF HOLE		COMPLETED <i>11-22-97</i>	
9. TOTAL DEPTH OF HOLE <i>20 ft</i>				18. TOTAL CORE RECOVERY FOR BORING %			
				19. SIGNATURE OF INSPECTOR <i>Fred Holman DE&S Geologist</i>			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2					
	4					
	6					
	8		<i>8.0 f. SAND, wet, firm</i>	<i>60%</i>	<i>IS30-01 8-9'</i>	<i>Hnu 250 200 60</i>
	10					
	12					
	14					<i>Core sample from 16-20 ft had poor recovery (~40%) Recovered core is estimated to be from a depth interval of ~18.5-20 ft</i>
	16			<i>40%</i>		
	18		<i>~18.5 si-CLAY, soft-firm, low plast, med-gray</i> <i>~18.8 CLAY w minor silt, soft, low to med plast, med-gray minor peat, grading to brn-gray w increasing peat</i>			<i>* * * Hnu IS30-02 → 200 @ ~18.8'; abundant free-phase DNAPL in core-catcher tracks & in water in core tube</i>
	20					

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Geoprobe soil Sampling inside Bldg 25</i>		10. SIZE AND TYPE OF BIT <i>1" x 1 3/4" dia core barrel</i>		
2. LOCATION (Coordinates or Station) <i>7.7 ft</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>FUGRO</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>IR88-IS31</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED <i>2</i>
5. NAME OF DRILLER <i>Frank Ward</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE	STARTED <i>11-22-97 @ 1400</i>	COMPLETED <i>11-22-97</i>
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE <i>20 ft</i>		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Holmer DE&S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
8	8		8.0 f. to v.f. SAND, wet, firm, lt yel-orange w lt gray mottling assoc'd w clayey areas.	90%	IS30-01 8-9 ft	Hnu 9 15 5 12
16	16		16.0 v.f. SAND, wet, firm, sparse peat frags, gray			Hnu
17.0	17.0		17.0 interlayered v.f. SAND & CLAY firm,			110
17.5	17.5		17.5 CLAY, soft, low-med plast, w minor v.f. sand seams (< 1/8") med-dk gray, sparse peat	95%	IS31-02 @ ~16.8 ft	100 20 8
18.9	18.9		18.9 grading to peaty-CLAY, low-med plast, soft-firm, gray-brn			1 1 0
20	20					

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Site 88: Bldg 25</i>		10. SIZE AND TYPE OF BIT <i>3/4" ID HSA</i>		
2. LOCATION (Coordinate, or Station) <i>PITT Wellfield: 3 ft W of EX 04</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Parratt-Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>GME 55</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>IR88-IS32</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED <i>5</i>
5. NAME OF DRILLER <i>Layne Pech / Parratt-Wolff</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		STARTED <i>3/23/98 @ 1345</i>
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		COMPLETED <i>1515</i>
9. TOTAL DEPTH OF HOLE <i>22 ft BGS</i>		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Hohmer DE&S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						Geoprobe macrocore Sampler (2" x 48") from 4-20 ft. bgs
	5		4.0 v.f. SAND w minor silt & clay, cohesive, friable, moist	50%	4	Split-spoon sample 20-22 ft bgs
	10		~9 si-cl-f. SAND, moist, silt plast ~10 f SAND, minor fines, moist, lt gray	75	8	
	12		11 as above, med-gray, wet, loose		12	
	14		as above	40%		
	16		as above		16	
	18		grading to si-v.f. SAND, wet, cohesive, friable, solvent odor	30%		
	20		poor recovery			
	20		Contact between sand & clay not recovered			
	22		20.0 CLAY w minor peat med plast,	100%	20	Spt Spoon sample 1 3/4" x 24"
					22	

DRILLING LOG	DIVISION	INSTALLATION CAMP LEWNE, NC	SHEET 1 OF 1 SHEETS
1. PROJECT Blk. H225 DNAPL Source Zone Borings	10. SIZE AND TYPE OF BIT		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
2. DRILLING AGENCY TARRANT - Wolfe Inc.	12. MANUFACTURER'S DESIGNATION OF DRILL CME 55 Adapted for hollow stem AUGERS		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN
4. HOLE NO. (As shown on drawing title and file number) IR88-R0501	14. TOTAL NUMBER CORE BOXES		15. ELEVATION GROUND WATER
5. NAME OF DRILLER Arnold CHAPEL	16. DATE HOLE STARTED 8/19/97 COMPLETED 8/19/97		17. ELEVATION TOP OF HOLE
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.	18. TOTAL CORE RECOVERY FOR BORING 72 %		19. SIGNATURE OF INSPECTOR INTERIA
7. THICKNESS OF OVERBURDEN NA	19. SIGNATURE OF INSPECTOR JOHN T. LONDERGAN		
8. DEPTH DRILLED INTO ROCK NA			
9. TOTAL DEPTH OF HOLE 20.0 FEET			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			8-INCH MANHOLE			
			very fine sand, dry			Hand (ppm)
			water tight gripper plug			
	2		grout mixed at 600 lb Portland Cement w/ 20 gal water and 6 1/2 bentonite			
	4		4-INCH DIAM. SCH 40 FLUSH THREADED JOINT PVC CASING			
	6		Hydro carbon odor			9.2 147 47 121
	8		bentonite seal			31 15.2
	8.40		12.75-INCH DIAM. BOREHOLE			9.8 46
	10		Very fine sand, wet, off grey color			4.6 3.5
	12		Drilling Service Inc. #1 Filter Sand 704-322-1100 8-50 lb bags			4.7 1.8 2.4 1.5 1.3 1.5
	14		4-inch diam. 304 SS 0.01-inch wire wrap continuous slot screen			22.4 10.2 4.3 10.0
	16					165.0 270.0 122.0
	18		silty clay, off grey w/ buff			27.0
	20		1' sand 304 SS 4			ROSD-1 TCE 17.0 ROSD-2 TCE 13 ROSD-3 TCE 20.0

DRILLING LOG		DIVISION	INSTALLATION CAMP LEJEUNE, NC	SHEET 01 OF 11 SHEETS
1. PROJECT Bldg. #225 DNAPL Source Zone Prings			10. SIZE AND TYPE OF BIT	
2. DRILLING AGENCY Farratt Wolff			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. HOLE NO. (As shown on drawing title and file number) IR88-RW02			12. MANUFACTURER'S DESIGNATION OF DRILL CMESS Adapted for hollow stem auger	
4. NAME OF DRILLER Arnold Chapel			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	
5. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			14. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN NA			15. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK NA			16. DATE HOLE STARTED 8/19/97 COMPLETED 8/19/97	
8. TOTAL DEPTH OF HOLE 120.0'			17. ELEVATION TOP OF HOLE	
			18. TOTAL CORE RECOVERY FOR BORING 82 %	
			19. SIGNATURE OF INSPECTOR JOHN T. LONDESKA	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
			8-inch diameter manhole			
			very fine sand, dry, lt gray			
			water tight gripper cap			
			grout mixed at 600 lbs portland cement w/ 40 gal water and 8 lbs bentonite			
			4-inch diameter schedule 40 PVC flush threaded casing			
			12.75-inch diam. borehole			
			cast			
			change to a tan color			
			bentonite seal			
			change back to a lt. gray color			
			4-inch diameter 304 stainless steel			
			0.01-inch wire wrap continuous slot screen w/ flush threaded joints			
			Prilly Service Inc. #1 fine sand 704-322-1100 8-50 lb bags of sand			
			silty clay, gray, soft wet			

to 8.96' 8/19/97 100% hrs

2.5 ft recovery from 4' push

3.4 ft recovery from 4' push

3.5 ft recovery from 4' push

4.0 ft recovery from 4.0 ft push

1.0 ft recovery from 1.0 ft push

41.7
8.8
22.0
66.0
5.6
11.3

5.5
4.6
2.7
1.3
12.0

22.0
11.0
4.4
97.0
72.0
6.7
3.3
11.2
14.7
36.0
12.0
16.7
16.0
4.0
5.6
19.0
13.1
94.0
20.0

RW02-4
TRH 9.0-9.5

RW02-1
PCE 17.0'

RW02-2
PCE 18.0'

RW02-09
FOC 18.0-18.5

RW02-3
PCE 18.5'

DRILLING LOG		DIVISION	INSTALLATION CAMP LESEUNE, NC	SHEET 81 OF 1 SHEETS
1. PROJECT Blg. H25 DNAPL Source Zone Borings		10. SIZE AND TYPE OF BIT 11. DATUM FOR ELEVATION SHOWN (TBM OR MSL)		
3. DRILLING AGENCY TARRANT-WOLFF INC.		12. MANUFACTURER'S DESIGNATION OF DRILL EMESS Adapted for hollow stem auger		
4. HOLE NO. (As shown on drawing title and file number) IR88-IW01		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED UNDISTURBED		
5. NAME OF DRILLER ARNOLD CHAPEL		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN NA		16. DATE HOLE STARTED 8/24/97 COMPLETED 8/25/97		
8. DEPTH DRILLED INTO ROCK NA		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE 19.0 FEET		18. TOTAL CORE RECOVERY FOR BORING 75 %		
		19. SIGNATURE OF INSPECTOR JOHN T. LONDERGAN		

ELEVATION a	DEPTH b	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			8-inch diam. MANHOLE			
			fine sand, lt brown, dry			HNu CPM
			water tight griffin cap			NOTE: 2-inch diam. were installed inside 8-inch ID AUGERS because fillers had no other auger available over 3.25 ft.
	2		2-inch diameter SCHEDULE 40 PVC casing w/ flush threaded joints	3		
	4		CLAYEY FINE SAND / dk grey			15.9
			grout mixed at 400 lbs 1 lb PORTLAND CEMENT w/ 7 lb BENTONITE ASB			227.0
	6		12.25-inch diam. BOREHOLE			268.0
			INCREASE IN CLAY CONTENT BECOMES FINE SAND dk grey wet			31.0
	8		BENTONITE SEAL			42.0
			BECOMES DARKER GREY IN color			48.0
	10		Drillase Service Inc. #1 filter sand			19.8
			704-322-1100			55.0
	12		12-50lb bags of SAND			61.0
			2-inch diameter 15-304 STAINLESS STEEL 0.01-inch WIRE WRAPE CONTINUOUS 5/8" OF SCREEN w/ flush threaded joints			5.7
	14		silty clay, soft, grey, wet			3.3
						17.0
	16					13.0
						13.6
	18					4.9
						1.2
	20					2.0
						2.1
	22					2.3
						22.0
						6.1
						1.5
						6.2
						20.1
						140.0
						613.0
						22.0



SOIL BORING LOG

SITE NAME AND LOCATION

DRILLING METHOD: 3/4" HSA

BORING NO.

88-EX02

SHEET

1 OF 1

SAMPLING METHOD: 2' x 1 3/8" SPLIT SPOON

DRILLING

START

FINISH

WATER LEVEL (BLS)

TIME

TIME

TIME

1534

1625

DATE

DATE

12/3

DATUM

ELEVATION

CASING DEPTH (BLS)

12/3

12/3

DRILL RIG

SURFACE CONDITIONS

ANGLE

BEARING

SAMPLE HAMMER TORQUE

FT.-LBS.

DRILLER:

DEPTH IN FEET (BLS)	BLOWS / 6 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	DEPTH IN FEET		FIELD SCREENING OR HEAD SPACE ANALYSIS OVM/HNU (ppm)	DESCRIPTION OF OPERATION AND REMARKS
								FROM	TO		
13					0-13' A-N						
13.0											
15					VF SAND, little silt, trace clay; dark gray; wet						
14	90										
15					VF SAND, some silt, trace clay; dark gray; wet						
16	100										
17					VF SAND, some silt, trace clay; dark gray; wet						
18	100										
19					SILT, trace fine sand; clay; gray; wet						SOLVENT ODOR
19.3				19.3							
20	100			20.0	CLAY, little silt, trace fine sand and peat; brown (dark); moist						
20.0											
21	30			21.0							
					PER JTL, NO SOIL SAMPLES COLLECTED FOR VOA.						

LOGGED BY:



-IRG304 TPN304

SOIL BORING LOG

SITE NAME AND LOCATION	DRILLING METHOD: 3'1/4" HSA				BORING NO. 88-EX03	
					SHEET OF	
	SAMPLING METHOD: 2' x 1 3/8" SPLIT SPOON				DRILLING	
					START	FINISH
	WATER LEVEL (BLS)				TIME 0720	TIME 0800
	TIME				DATE 12/4	DATE 12/4
DATUM	ELEVATION				CASING DEPTH (BLS)	

DRILLER:

DRILL RIG	SURFACE CONDITIONS	
ANGLE	BEARING	
SAMPLE HAMMER TORQUE	FT.-LBS.	

DEPTH IN FEET (BLS)	BLOWS / 6 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OVM/HNU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
0-16'					A-N						
16					VF SAND, some silt, trace M sand; dark gray; wet						EX03-01 @ 16.0' VOA
17	100										EX03-02 @ 17.5' VOA
18											EX03-03 @ 19.0' VOA
19	90			19.0	SILT, little clay, trace f sand; dark gray; wet						SL. SOLVENT ODOR
20				19.4							
20	100			20.0	CLAY, little silt, trace f sand; dark gray; wet						
21											
22											
23											
24											

LOGGED BY:



TON 304

SOIL BORING LOG

SITE NAME AND LOCATION	DRILLING METHOD: 3/4" HSA				BORING NO. 88-EX04	
	SAMPLING METHOD: GEORROBE MACROCORE				SHEET 1 OF 1	
	DATE				START	FINISH
	TIME				TIME 11:54	TIME 12:53
	DATE				DATE 12/4	DATE 12/4
	CASING DEPTH (BLS)					

DRILLER:

DRILL RIG	SURFACE CONDITIONS
ANGLE	BEARING
SAMPLE HAMMER TORQUE	FT.-LBS.

DEPTH IN FEET (BLS)	BLOWS / 6 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OMV/HNU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
16					VF SAND, some silt, little clay; dark brown; wet						
17		80%									EX04-01 (17.0') VOA
18					VF SAND, some silt, trace clay; dark gray; wet						EX04-02 (18.5') VOA
19											EX04-03 (19.5') VOA
20				20.0	SILT, some clay; dark gray; wet						SL. SOLVENT ODOR
21				21.0	CLAY, some silt; dark gray; moist						
22		80%		21.5	CLAY, little silt, peaty; dark brown; damp to moist						
23											
24											
BOHE 24.0'											

LOGGED BY:

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Site 88: Replacement Well</i>			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or Station) <i>PITT Wellfield: 3 ft N of EX04</i>			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY <i>Parratt-Wolfe</i>			12. MANUFACTURER'S DESIGNATION OF DRILL	
4. HOLE NO. (As shown on drawing title and file number) <i>EX04R</i>			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED <i>4</i>
5. NAME OF DRILLER <i>Layne Pech</i>			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED <i>3/23/98 @ 1545</i> COMPLETED <i>3/23/98 @</i>	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR <i>Fred Holmer DE&S Geologist</i>	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5					<i>1 3/4" x 24" split spoon sampler</i>
	8.7					
	10					
	12		<i>f. to v.f. SAND, trace fines, wet, loose, gray</i>	<i>60%</i>		
	14		<i>as above</i>	<i>75%</i>		
	16		<i>as above; solvent odor</i>	<i>90%</i>		
	18		<i>18.0 cl-sa-SILT, wet, silt plast</i>	<i>100%</i>		<i>solvent odor</i>
	19.3		<i>grading to cl-SILT, low plast, soft</i>			
	19.7		<i>grading to si-CLAY, soft, med plast</i>			
	20					



TON304

SOIL BORING LOG

SITE NAME AND LOCATION

DRILLING METHOD: 3/4" HSA

BORING NO.

EB-EX05

SHEET

1 OF 1

SAMPLING METHOD: GEOPROBE MACRO CORE

DRILLING

START

FINISH

WATER LEVEL (BLS)

TIME

1430

TIME

DATE

DATE

12/4

DATUM

ELEVATION

CASING DEPTH (BLS)

DRILL RIG

SURFACE CONDITIONS

ANGLE

BEARING

SAMPLE HAMMER TORQUE

FT.-LBS.

DRILLER:

DEPTH IN FEET (BLS)	BLOWS / 8 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS GMV/HNU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
0-17'					A-N						
17			NR		F SAND, little silt; tan; wet						
18	75				VF SAND, some silt, trace clay; dark brown; wet						EX05-01 (18') VOC
19				19.0	SILT, trace clay; f sand; dark brown; wet						EX05-02 (19') VOC
20				20.5	CLAY, trace silt; dark brown; moist						EX05-03 (20') VOC
21			DOHER 10								
22											
23											
24											

LOGGED BY:



- TON304

SOIL BORING LOG

SITE NAME AND LOCATION	DRILLING METHOD: 3 1/4" HSA				BORING NO. BB-EX06	
					SHEET 1 OF 1	
	SAMPLING METHOD: GEOPROBE MACRO CORE				DRILLING	
					START	FINISH
	WATER LEVEL (BLS)				TIME 0758	TIME 0840
	TIME				DATE	DATE
DATUM	ELEVATION			CASING DEPTH (BLS)	1215	1215

DRILLER:

DRILL RIG	SURFACE CONDITIONS	
ANGLE	BEARING	
SAMPLE HAMMER TORQUE	FT.-LBS.	

DEPTH IN FEET (BLS)	BLOWS / 8 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OM/HNU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
0					0-16' A-N						
16					F SAND, some silt; dark brown; gray; wet						
17					VF SAND, some silt, trace clay; dark gray; wet						
18		100									
19				19.0	SILT, little clay; dark gray; wet						
20				19.6	CLAY, little silt; dark gray; moist						
				Bottom 20.0'							

PID

2
1
0
0
0
0
0

LOGGED BY:



TAN 304

SOIL BORING LOG

SITE NAME AND LOCATION

DRILLING METHOD:

BORING NO.

88-IN02

SHEET

1 OF 1

SAMPLING METHOD:

DRILLING

START

FINISH

WATER LEVEL (BLS)

TIME

TIME

TIME

DATE

DATE

DATE

12/8

12/8

CASING DEPTH (BLS)

DATUM

ELEVATION

DRILL RIG

SURFACE CONDITIONS

ANGLE

BEARING

SAMPLE HAMMER TORQUE

FT.-LBS.

DRILLER:

DEPTH IN FEET (BLS)	BLOWS / 6 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OMV/HNU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
16					VF SAND, trace silt; gray; wet						
17					VF SAND, some silt; gray; wet						
18		100		18.0	SILT, little clay, trace vf sand; dark gray; wet						
19				18.7	CLAY, some silt; dark gray; wet						
20					CLAY, trace silt; dark gray; moist						
Bore 20'											

104
28
70
280
140
350
150
82

LOGGED BY:



- TPN 304

SOIL BORING LOG

SITE NAME AND LOCATION

DRILLING METHOD: 3 1/4" HSA

BORING NO.

88-1N03

SHEET

1 OF 1

SAMPLING METHOD: GEOPROBE MACRO CORE

DRILLING

START FINISH

TIME 1508 TIME 1535

WATER LEVEL (BLS)

TIME

DATE

DATE 12/8 DATE 12/8

DATUM

ELEVATION

CASING DEPTH (BLS)

DRILL RIG

SURFACE CONDITIONS

ANGLE

BEARING

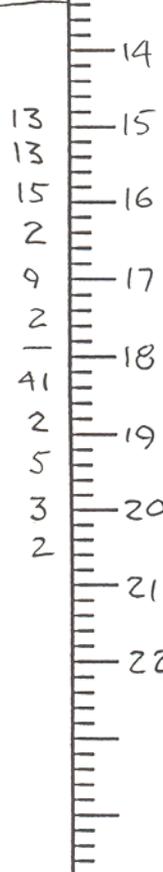
SAMPLE HAMMER TORQUE

FT.-LBS.

DRILLER:

DEPTH IN FEET (BLS)	BLOWS / 8 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OMV/HMU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
0-14					0-14' A-N						
14					VF SAND, little silt; clay; dark brown; wet						
15											
16	90				VF SAND, little to some silt (inc. w/ depth) gray; wet						88-1N03-01 (16.0') VOA
17											88-1N03-02 (17.5') VOA
18				18.0	SILT, some vf sand; dark gray; wet						88-1N03-03 (19') VOA
19	80			19.0							
20					CLAY, little silt, trace vf sand; dark gray; moist						
21											
22											

PID



LOGGED BY:



- TPN 304

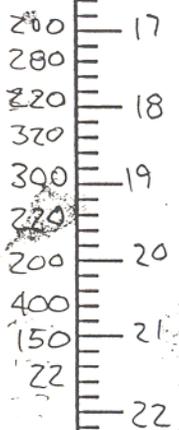
SOIL BORING LOG

SITE NAME AND LOCATION	DRILLING METHOD: 6" CASING DRIVE				BORING NO. BB-HC01	
					SHEET 1 OF 1	
	SAMPLING METHOD: GEOPROBE MACRO CORE				DRILLING	
					START	FINISH
	WATER LEVEL (BLS)				TIME	TIME
	DATE				DATE	DATE
DATUM	ELEVATION			CASING DEPTH (BLS)		

DRILLER:

DRILL RIG	SURFACE CONDITIONS	
ANGLE	BEARING	
SAMPLE HAMMER TORQUE	FT.-LBS.	

DEPTH IN FEET (BLS)	BLOWS / 6 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OVA/HNU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
16											
17											
18					VF SAND, some silt; dark gray; wet						STRONG SOLVENT ODOR
19	19							BB-HC01-01 (18.5') VOA			FREE PHASE DNAPL
20								BB-HC01-02 (20') VOA			
21				20.3?	SILT, little clay (increase amt w/depth to some); dark gray; wet						
22				21.5	CLAY, trace silt; dark gray; moist			BB-HC01-03 (21') VOA			



LOGGED BY:



- TDN 304

SOIL BORING LOG

SITE NAME AND LOCATION	DRILLING METHOD:				BORING NO. RW06	
	SAMPLING METHOD:				SHEET 1 OF 1	
					DRILLING	
					START	FINISH
	WATER LEVEL (BLS)				TIME	TIME
	TIME				DATE	DATE
	DATE				DATE	DATE
	CASING DEPTH (BLS)					

DRILL RIG	SURFACE CONDITIONS
ANGLE	BEARING
SAMPLE HAMMER TORQUE	FT.-LBS.

DEPTH IN FEET (BLS)	BLOWS / 6 IN. ON SAMPLER	% RECOVERY	SOIL GRAPH	MATERIAL CHANGE DEPTH (BLS)(FT)	DESCRIPTION OF MATERIAL	SAMPLED INTERVAL	SAMPLE No.	FIELD SCREENING OR HEAD SPACE ANALYSIS OM/HMU (ppm)	DEPTH IN FEET		DESCRIPTION OF OPERATION AND REMARKS
									FROM	TO	
14											
15											
16					VF SAND, some silt; dark brown; wet						
17					VF SAND, little silt; gray; wet						
18											
19											
20		50									
21											
22											

60
24
30
20
160
200

DRILLER:

LOGGED BY:

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Site 88: Replacement Well</i>		10. SIZE AND TYPE OF BIT		
2. LOCATION (Coordinates or Station) <i>PITT Wellfield: 3 ft N of EX04</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Parratt-Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL		
4. HOLE NO. (As shown on drawing title and file number) <i>EX04R</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER <i>Layne Pech</i>		14. TOTAL NUMBER CORE BOXES	4	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		
8. DEPTH DRILLED INTO ROCK		STARTED <i>3/23/98 @ 1545</i> COMPLETED <i>3/23/98 @</i>		
9. TOTAL DEPTH OF HOLE		17. ELEVATION TOP OF HOLE		
		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Holzman DE&S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	5					<i>1 3/4" x 24" split spoon sampler</i>
	12		<i>f. to v.f. SAND, trace fines, wet, loose, gray</i>	60%	12	
	14		<i>as above</i>	75%	14	
	16		<i>as above; solvent odor</i>	90%	16	
	18		<i>18.0 cl-sa-SILT, wet, silt plast</i>	100%	18	<i>solvent odor</i>
	20		<i>grading to cl-SILT, low plast, soft</i>			
			<i>grading to si-CLAY, soft, med plast.</i>			

PID
20
280
50
70

35
12
10
10
30
200
20
10
3
3

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Site 88 : Bldg 25</i>		Aquifer Well Point Installation		10. SIZE AND TYPE OF BIT <i>6 1/4" ID HSA</i>
2. LOCATION (Coordinates or Station) <i>PITT Wellfield</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Parratt-Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>CME 55</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>WP01AQT</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER <i>Lee</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		
8. DEPTH DRILLED INTO ROCK		STARTED <i>6-25-98 @ 0000</i> COMPLETED <i>6-26-98</i>		
9. TOTAL DEPTH OF HOLE <i>23.5 ft BGS</i>		17. ELEVATION TOP OF HOLE		
		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Holmer DE & S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0					No core samples from 0-13' bgs
	5					Continuous tube sampling from 13-21' bgs w 2" ID x 4 ft long geoprobe Macrosampler
	10					
	13		13.0 f. SAND w minor fines, wet, cohesive, lt gray			PID Reading
	14			70%	14	25 ppm
	14.5				14.5	20
	15				15	3
	15.5				15.5	0
	16		as above			
	16			65%		
	17.5				17.5	0
	18				18	0
	18.5				18.5	12
	19		19.0 cl-SILT w f. sand, wet low plast, lt gray, soft			
	19			100%		
	19.5		19.5 grading to si-CLAY, wet, low plast, med gray, v. soft.		19.5	110
	20		19.8 grading to CLAY w silt & minor peat, wet, soft, med plast, gray-brn.		20	20
	20.5		as above to 21 ft bgs		20.5	12
	21					No PCE odor at 21.0
	21					-Drilled to 19.5' bgs to set surface casing (3" ID x 21.1' steel pipe)
	21					-Pushed casing from 19.5-21.0' bgs
	21					-Grout
	22					
	24					

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Site 88: Bldg 25 Aquitard Well Point Installation</i>		10. SIZE AND TYPE OF BIT <i>6 1/4" ID HSA</i>		
LOCATION (Coordinates or Station) <i>PITT Wellfield</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Parrott Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>CME 55</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>WP02AQT</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER <i>Lee</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		
8. DEPTH DRILLED INTO ROCK		STARTED <i>6-25-98 @ 1015</i>		
9. TOTAL DEPTH OF HOLE <i>25.5 ft BGS</i>		COMPLETED <i>6-26-98</i>		
		17. ELEVATION TOP OF HOLE		
		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Holman DE & S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						No core samples collected from 0-15 ft
	5					Continuous tube sampling from 15-21' bgs w 2" ID x 4 ft long geoprobe Macrosampler
	10					
	15		15.0 f-v.f. SAND, wet, cohesive, lt gray		15	PID Reading
	16			100%	15.5	55 ppm
	17		17-19 grading to si-v.f. SAND, wet, cohesive, lt gray		16	12
	18			50%	16.5	3
	19		19.0 grading si-CLAY, wet, soft, low plast, lt to med gray.		17	110
	20		20.0 as above, w minor peat grading to gray brn to TD @ 21' bgs	100%	18	
	21				19	120
	22				19.5	20
	24				20	8
	26				20.5	8
					21	0
					21	
						TD drilling = 19.0' bgs Set surface casing from 19.0-21.0' bgs (3" ID x 21' steel pipe) Grout outside casing from 19' to surface

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET OF 1 SHEETS
1. PROJECT <i>Site 88 : Bldg 25 Aquitard Well Point Installation</i>		10. SIZE AND TYPE OF BIT <i>6 1/4" ID HSA</i>		
2. LOCATION (Coordinates or Station) <i>PITT Wellfield</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Parrott Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>CME 55</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>WP02AQT</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER <i>Lee</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE	STARTED	COMPLETED
8. DEPTH DRILLED INTO ROCK		<i>6-25-98 @ 1015 6-26-98</i>		
9. TOTAL DEPTH OF HOLE <i>25.5 ft BGS</i>		17. ELEVATION TOP OF HOLE		
		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Holman DE & S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			3" dia. steel casing			No Core samples collected from 0-15 ft
			Grout			
	5		2" dia. hollow drive rod (removed)			Continuous tube sampling from 15-21' bgs w 2" ID x 4 ft long geoprobe Macrosampler
			Sample collection Tubing (1/4" OD)			
	10					
	15		15.0 f-v.f SAND, wet, cohesive, lt gray			PID Reading
	16		Bentonite Seal	100%	15.5 55 ppm 16 12 16.5 3	
	17		17-19 grading to si-v.f SAND, wet, cohesive, lt gray			
	18			50%	18 110	
	19		19.0 grading si-CLAY, wet, soft, low plast, lt to med gray.			120 20 8 8 0
	20		20.0 as above, w minor peat grading to gray brn to TD @ 21' bgs	100%	19 19.5 20 20.5 21	
	21					
	22					
	24		WP02AQT Specs. Drive Point @ 25.5' bgs Sand Pack to 23.0' bgs Bentonite to 15.0' bgs Screen @ 24 to 25' bgs Tubing Stickup 2.8' ags 3" dia steel casing @ 21' bgs Surface completion includes 1' of 3" dia. PVC pipe and a press on cap with a 1/4" hole.			TD drilling = 19.0' bgs Set surface casing from 19.0-21.0' bgs (3" ID x 21' steel pipe) Grout outside casing from 19' to surface
	26					

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 1 SHEETS
1. PROJECT <i>Site 88 : Bldg 25 Installation</i>		<i>Aquifer Well Point</i>		10. SIZE AND TYPE OF BIT <i>6 1/4" ID HSA</i>
2. LOCATION (Coordinates or Station) <i>PITT Wellfield</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Parratt-Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>CME 55</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>WP01AQT</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED <i>3</i>
5. NAME OF DRILLER <i>Lee</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED <i>6-25-98 @ 0800</i> COMPLETED <i>6-26-98</i>		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE <i>23.5 ft BGS</i>		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR <i>Fred Holmer DE & S Geologist</i>		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			3" dia. steel casing			No core samples from 0-13' bgs
			grout			
	5		2" dia. hollow drive rod (removed)			Continuous tube sampling from 13-21' bgs w 2" ID x 4 ft long geoprobe Macrosampler
			Sample Collection Tubing 1/4" OD			
	10					
	13		13.0 f. SAND w minor fines, wet, cohesive, lt gray	70%	14	PID Reading 25 ppm
	15				14.5	20
	16		as above		15	3
	16				15.5	0
	18		Bentonite seal	65%	17.5	0
	18				18	0
	19		19.0 cl-SILT w f. sand, wet low plast, lt gray, soft		18.5	12
	20		19.5 grading to si-CLAY, wet, low plast, med gray, v. soft.	100%	19	
	20		19.8 grading to CLAY w silt & minor peat, wet, soft, med plast, gray-brn.		19.5	110
	21		as above to 21 ft bgs		20	20
	22		WP01AQT specs.		20.5	12
	22		Drive point @ 23.5' bgs			No PCE odor at 21.0
	24		Sand Pack to 21.7' bgs			- Drilled to 19.5' bgs to set surface casing. (3" ID x 21.1' steel pipe)
			Bentonite to 15.0' bgs			- Pushed casing from 19.5-21.0' bgs
			Screen @ 22-23' bgs			- Grout
			Tubing Stickup 1.6' ags			
			3" dia. steel casing @ 21' bgs			
			Surface completion includes 1 foot of 3" dia. PVC pipe and a press on cap with a 1/4" hole.			

DRILLING LOG		DIVISION	INSTALLATION <i>MCB Camp Lejeune</i>	SHEET 1 OF 2 SHEETS
1. PROJECT <i>Site 88: Bldg 25; Upper Castle Hayne monitor well</i>		10. SIZE AND TYPE OF BIT		
2. LOCATION (Coordinate or Station) <i>PITT Wellfield</i>		11. DATUM FOR ELEVATION SHOWN (TBM or MSL)		
3. DRILLING AGENCY <i>Farratt Wolfe</i>		12. MANUFACTURER'S DESIGNATION OF DRILL <i>CMESS</i>		
4. HOLE NO. (As shown on drawing title and file number) <i>MW 10 IW</i>		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED <i>7</i>
5. NAME OF DRILLER <i>Lee</i>		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED <i>6/26/98</i> COMPLETED <i>6/26/98</i>		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE <i>39'</i>		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			6" dia. steel casing			No core samples collected from 0-15ft
			Grout			
			2" dia. Sch. 40 PVC Riser			Continuous tube sampling from 15-38' logs & 2" ID x 4ft geoprobe macro sampler
	5					
	10					
	15					PID Reading
	16		fine SAND w minor fines, wet, cohesive, lt gray (poor recovery)	25%		0 ppm
	17		as above			
	18		grading to si-cl-v.f. SAND, wet, cohesive, slt plast, med gray	65%		5 ppm
	19		grading to si-CLAY w minor f. sand, wet, soft, low plast. med gray			180 ppm
	20		20.2 grading to si-CLAY w peat, soft, low-med plast, gray-brown to 21'	100%		180 ppm 100 ppm 100 ppm 20 ppm
			Bentonite			
	22		22.0 CLAY w minor peat, wet, low-med plast, med slt ft, gray w brn in peat fraction			0
	24		23.5 peaty CLAY, wet, low plast, gray-brn	100%		0
	26		26 CLAY, wet, high plast, med-stiff to stiff, med gray			0
	28		as above	100%		0

DRILLING LOG		DIVISION		INSTALLATION MCB Camp Lejeune		SHEET 2 OF 2 SHEETS	
1. PROJECT Site 88; Bldg. 25 Upper Castle Hayne Monitor Well				10. SIZE AND TYPE OF BIT			
2. LOCATION (Coordinates or Station) PITT Wellfield				11. DATUM FOR ELEVATION SHOWN (TBM or MSL)			
3. DRILLING AGENCY Parratt-Wolfe				12. MANUFACTURER'S DESIGNATION OF DRILL CME 55			
4. HOLE NO. (As shown on drawing title and file number) MW10IW				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED 7	
5. NAME OF DRILLER Lee				14. TOTAL NUMBER CORE BOXES			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				16. DATE HOLE STARTED 6/26/98		COMPLETED 6/26/98	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE			
8. DEPTH DRILLED INTO ROCK				18. TOTAL CORE RECOVERY FOR BORING %			
9. TOTAL DEPTH OF HOLE 39'				19. SIGNATURE OF INSPECTOR			

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	30		Bentonite			PID Reading
	30.5		30.5 peaty - CLAY, wet, friable to st plast, med stiff, gray-brn.			0 ppm
	32		2" dia. Sch. 40 PVC Riser	100%		0
	32.5		32.5 CLAY w peat, wet, stiff low-med plast, gray			0
	33.7		33.7 grading to f. SAND (no recovery 34-35' bgs)			0
	34					0
	35		35 si-sa peaty CLAY, friable, wet gray-brn, wood chips to 2" dia.			0
	35.5		35.5 si-cl-f. SAND, wet friable gray	100%		0
	36		36 sa-CLAY, wet, low plast gray			0
	36.3		36.3 f. SAND wet, non-cohesive, lt. gray, clean well sorted sand to end of sample			0
	38					0
	40		2" dia. well MW10IW Specs Well Length: 39' bgs 2" Riser ground surface to 34' bgs 2" PVC wire wrap screen 0.010 from 34-38.5 Sand Pack 31.8-39' bgs Bentonite 17.5-31.8 bgs Grout 0.5-17.5' bgs			

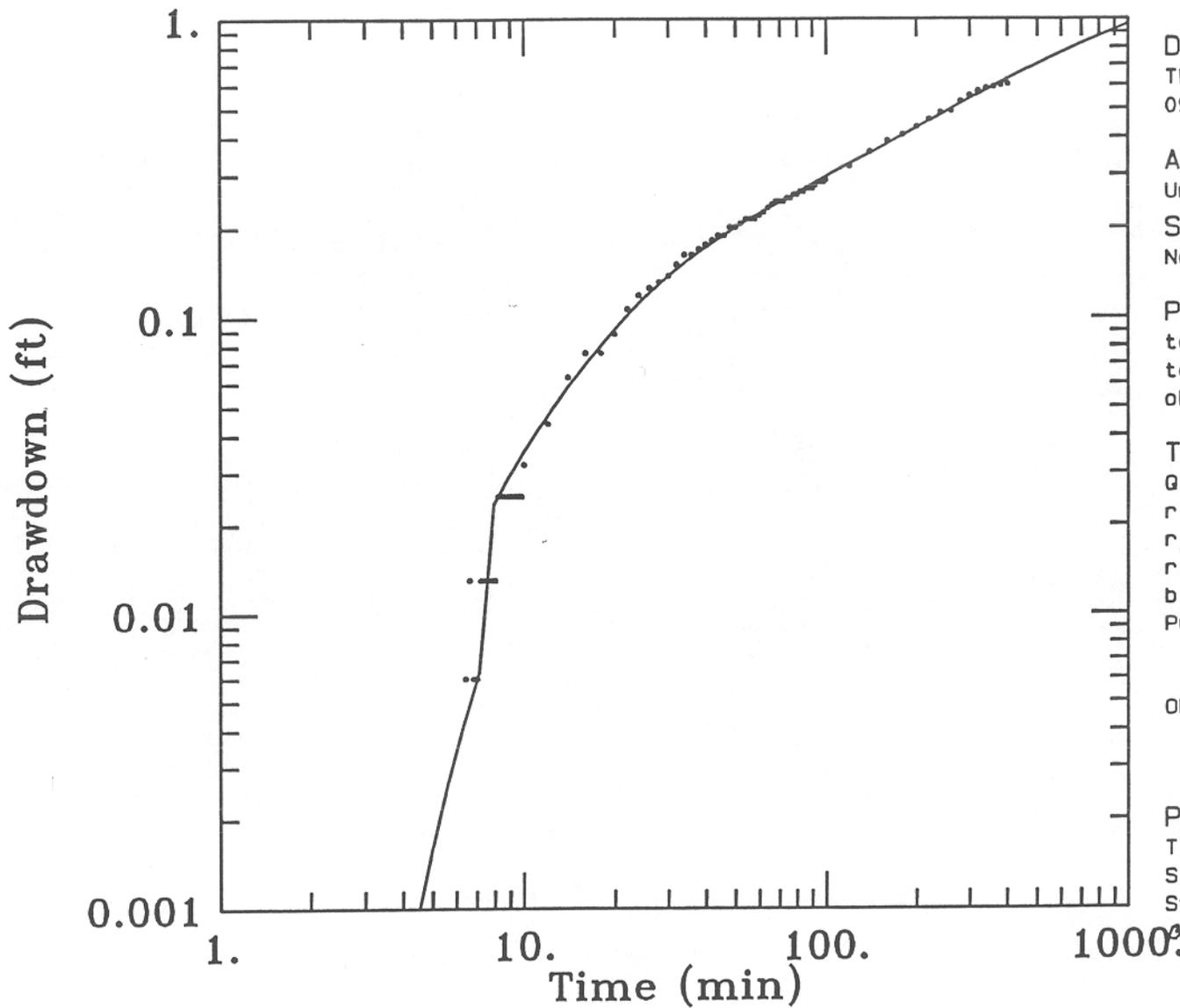
DRILLING LOG		DIVISION	INSTALLATION MCB Camp Lejeune	SHEET 2 OF 2 SHEETS
1. PROJECT Site 88; Bldg. 25 Upper Castle Hayne Monitor Well		10. SIZE AND TYPE OF BIT		
2. LOCATION (Coordinates or Section) PITT Wellfield		11. DATUM FOR ELEVATION SHOWN (IBN or MSL)		
3. DRILLING AGENCY Parratt-Wolfe		12. MANUFACTURER'S DESIGNATION OF DRILL CME 55		
4. HOLE NO. (As shown on drawing title and file number) MW10IW		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED 7
5. NAME OF DRILLER Lee		14. TOTAL NUMBER CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 6/26/98 COMPLETED 6/26/98		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE		
9. TOTAL DEPTH OF HOLE 39'		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR		

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	30		Bentonite			PID Reading
			32.5 peaty - CLAY, wet, friable to slt plast, med stiff, gray-brn.			0 ppm
	32		2" dia. Sch. 40 PVC Riser	100%		0
			32.5 CLAY w peat, wet, stiff low-med plast, gray			0
	34		33.7 grading to f. SAND (no recovery 34-35' bgs)			0
			35 si-sa peaty CLAY, friable, wet gray-brn, wood chips to 2" dia.			0
	36		35.5 si-cl-f. SAND, wet friable gray	100%		0
			36 sa - CLAY, wet, low plast gray			0
	38		36.3 f. SAND wet, non-cohesive, lt. gray, clean well sorted sand to end of sample			0
	40		2" dia well MW10IW Specs Well length: 39' bgs 2" Riser ground surface to 34' bgs 2" PVC wire wrap screen 0.010 from 34-38.5 Sand Pack 31.8-39' bgs Bentonite 17.5-31.8 bgs Grout 0.5-17.5' bgs			

DRILLING LOG		DIVISION	INSTALLATION MCB Camp Lejeune	SHEET 2 OF 2 SHEETS
1. PROJECT Site 88: Bldg. 25 Upper Castle Hayne Monitor - Well			10. SIZE AND TYPE OF BIT	
2. LOCATION (Coordinates or State) PITT Wellfield			11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	
3. DRILLING AGENCY Parratt-Wolfe			12. MANUFACTURER'S DESIGNATION OF DRILL CME 55	
4. HOLE NO. (As shown on drawing title and site number) MW10IW			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED UNDISTURBED 7
5. NAME OF DRILLER Lee			14. TOTAL NUMBER CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 6/26/98 COMPLETED 6/26/98	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE	
9. TOTAL DEPTH OF HOLE 39'			18. TOTAL CORE RECOVERY FOR BORING %	
			19. SIGNATURE OF INSPECTOR	

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	30		Bentonite			PID Reading
	30.5		peaty - CLAY, wet, friable to st plast, med stiff, gray brn.			0 ppm
	32		2" dia. Sch. 40 PVC Riser	100%		0
	32.5		CLAY w peat, wet, stiff low-med plast, gray			0
	33.7		grading to f. SAND (no recovery 34-35' bgs)			0
	35		si-sa peaty CLAY, friable, wet gray-brn, wood chips to 2" dia.			0
	35.5		si-cl-f. SAND, wet friable gray	100%		0
	36		sa-CLAY, wet, low plast gray			0
	36.3		f. SAND wet, non-cohesive, lt. gray, clean well sorted sand to end of sample			0
	40		2" dia well			
			MW10IW Specs			
			Well Length: 39' bgs			
			2" Riser ground surface to 34' bgs			
			2" PVC wire wrap screen 0.00 from 34-38.5			
			Sand Pack 31.8-39' bgs			
			Bentonite 17.5-31.8 bgs			
			Grout 0.5-17.5' bgs			

APPENDIX C
Aquifer Test Data, Drawdown and
Curve Match Plots



DATA SET:
 TW02-PT.AQT
 09/28/97

AQUIFER MODEL:
 Unconfined
 SOLUTION METHOD:
 Neuman (approx.)

PROJECT DATA:
 test date: Sept 22, 1997
 test well: RW-02
 obs. well: TW-02

TEST DATA:
 $Q = 0.067 \text{ ft}^3/\text{min}$
 $r = 18.8 \text{ ft}$
 $r_c = 0.17 \text{ ft}$
 $r_w = 0.5 \text{ ft}$
 $b = 11. \text{ ft}$
 Pumping Well Screen Depth:
 top = 6. ft
 bot. = 11. ft
 Obs. Well Screen Depth:
 top = 0. ft
 bot. = 7. ft

PARAMETER ESTIMATES:
 $T = 0.01278 \text{ ft}^2/\text{min}$ $K = 6E-4 \frac{\text{cm}}{\text{s}}$ ✓
 $S = 0.002564$
 $S_y = 0.008588$
 $\sigma = 1.049$

Water Level Drawdown at Observation Well TW02 During Pump Test

SE2000
Environmental Logger
08/23 20:17

Unit# 373 Test 1
Setups: INPUT 2

Type Level (F)
Mode TOC
I.D. TW:02

Reference 8.550
PSI at Ref. 2.325
SG 1.000
Linearity 0.020
Scale factor 19.901
Offset -0.064
Delay mSEC 50.000

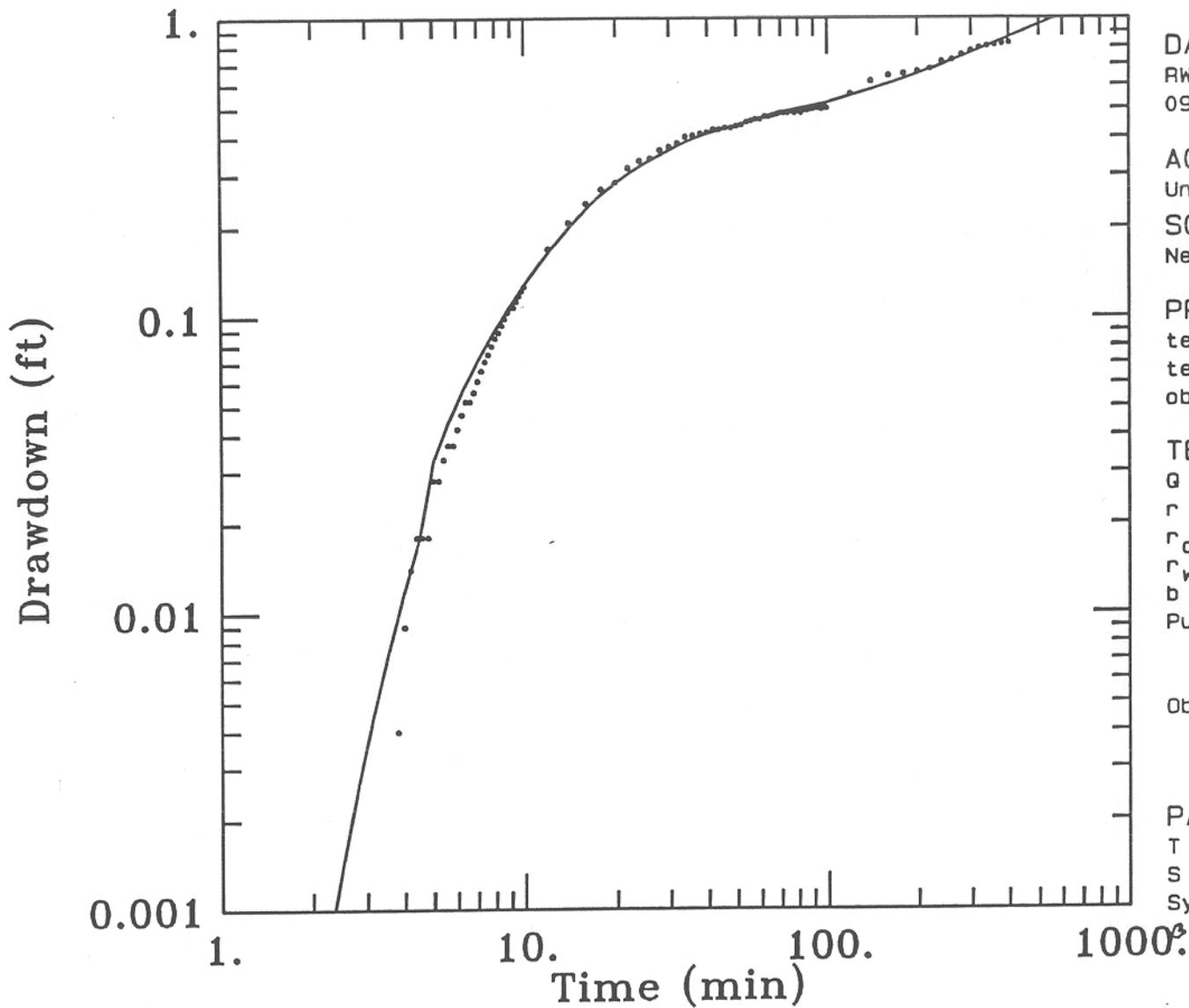
Step 0 08/22 11:59:35
Elapsed Time INPUT 2

Elapsed Time (min)	Water Level (ft)
0.0000	8.474
0.0083	8.474
0.0166	8.474
0.0250	8.468
0.0333	8.474
0.0416	8.474
0.0500	8.474
0.0583	8.474
0.0666	8.474
0.0750	8.474
0.0833	8.474
0.0916	8.474
0.1000	8.468
0.1083	8.474
0.1166	8.468
0.1250	8.474
0.1333	8.474
0.1416	8.474
0.1500	8.474
0.1583	8.468
0.1666	8.474
0.1750	8.468
0.1833	8.474
0.1916	8.468
0.2000	8.474
0.2083	8.474
0.2166	8.474
0.2250	8.474
0.2333	8.468
0.2416	8.474
0.2500	8.474
0.2583	8.474
0.2666	8.474
0.2750	8.474
0.2833	8.474
0.2916	8.468
0.3000	8.474
0.3083	8.474
0.3166	8.474
0.3250	8.468
0.3333	8.468
0.3500	8.468
0.3666	8.474
0.3833	8.474
0.4000	8.474
0.4166	8.474
0.4333	8.474

Elapsed Time (min)	Water Level (ft)
0.4500	8.474
0.4666	8.468
0.4833	8.468
0.5000	8.474
0.5166	8.474
0.5333	8.474
0.5500	8.468
0.5666	8.474
0.5833	8.474
0.6000	8.468
0.6166	8.474
0.6333	8.474
0.6500	8.474
0.6666	8.474
0.6833	8.474
0.7000	8.468
0.7166	8.474
0.7333	8.474
0.7500	8.474
0.7666	8.474
0.7833	8.474
0.8000	8.474
0.8166	8.474
0.8333	8.474
0.8500	8.474
0.8666	8.468
0.8833	8.468
0.9000	8.474
0.9166	8.474
0.9333	8.474
0.9500	8.474
0.9666	8.474
0.9833	8.474
1.0000	8.474
1.2000	8.474
1.4000	8.474
1.6000	8.474
1.8000	8.474
2.0000	8.474
2.2000	8.474
2.4000	8.468
2.6000	8.468
2.8000	8.474
3.0000	8.468
3.2000	8.468
3.4000	8.468
3.6000	8.474

Elapsed Time (min)	Water Level (ft)
3.8000	8.474
4.0000	8.474
4.2000	8.480
4.4000	8.474
4.6000	8.474
4.8000	8.474
5.0000	8.474
5.2000	8.480
5.4000	8.474
5.6000	8.480
5.8000	8.474
6.0000	8.480
6.2000	8.480
6.4000	8.480
6.6000	8.487
6.8000	8.480
7.0000	8.480
7.2000	8.487
7.4000	8.487
7.6000	8.487
7.8000	8.487
8.0000	8.487
8.2000	8.499
8.4000	8.499
8.6000	8.499
8.8000	8.499
9.0000	8.499
9.2000	8.499
9.4000	8.499
9.6000	8.499
9.8000	8.499
10.0000	8.506
12.0000	8.518
14.0000	8.537
16.0000	8.550
18.0000	8.550
20.0000	8.562
22.0000	8.581
24.0000	8.593
26.0000	8.600
28.0000	8.606
30.0000	8.612
32.0000	8.625
34.0000	8.637
36.0000	8.637
38.0000	8.644
40.0000	8.650

Elapsed Time (min)	Water Level (ft)
42.0000	8.656
44.0000	8.663
46.0000	8.663
48.0000	8.675
50.0000	8.675
52.0000	8.681
54.0000	8.688
56.0000	8.688
58.0000	8.688
60.0000	8.694
62.0000	8.700
64.0000	8.707
66.0000	8.713
68.0000	8.719
70.0000	8.719
72.0000	8.719
74.0000	8.725
76.0000	8.725
78.0000	8.732
80.0000	8.732
82.0000	8.738
84.0000	8.738
86.0000	8.744
88.0000	8.744
90.0000	8.744
92.0000	8.750
94.0000	8.757
96.0000	8.757
98.0000	8.757
100.000	8.763
120.000	8.794
140.000	8.832
160.000	8.864
180.000	8.882
200.000	8.908
220.000	8.933
240.000	8.958
260.000	8.964
280.000	9.002
300.000	9.027
320.000	9.046
340.000	9.058
360.000	9.065
380.000	9.071
400.000	9.077



DATA SET:
 RW01-PT.OUT
 09/28/97

AQUIFER MODEL:
 Unconfined
 SOLUTION METHOD:
 Neuman (approx.)

PROJECT DATA:
 test date: Sept 22, 1997
 test well: RW-02
 obs. well: RW-01

TEST DATA:
 $Q = 0.067 \text{ ft}^3/\text{min}$
 $r = 15. \text{ ft}$
 $r_c = 0.17 \text{ ft}$
 $r_w = 0.5 \text{ ft}$
 $b = 11. \text{ ft}$
 Pumping Well Screen Depth:
 top = 6. ft
 bot. = 11. ft
 Obs. Well Screen Depth:
 top = 6. ft
 bot. = 11. ft

PARAMETER ESTIMATES: ✓
 $T = 0.008504 \text{ ft}^2/\text{min}$ $K = 4E-4 \frac{\text{cm}}{\text{s}}$
 $S = 0.001814$
 $S_y = 0.01433$
 $\sigma = 1.104$

Water Level Drawdown at Observation Well RW01 During Pump Test

SE2000
Environmental Logger
08/23 16:44

Unit# 328 Test 1
Setups: INPUT 4

Type Level (F)
Mode TOC
I.D. RW01

Reference 8.130
PSI at Ref. 4.329
SG 1.000
Linearity 0.112
Scale factor 14.921
Offset -0.011
Delay mSEC 50.000

Step 0 08/22 08:59:55
Elapsed Time INPUT 4

Elapsed Time (min)	Water Level (ft)
0.0000	8.059
0.0083	8.059
0.0166	8.059
0.0250	8.059
0.0333	8.059
0.0416	8.059
0.0500	8.059
0.0583	8.059
0.0666	8.059
0.0750	8.059
0.0833	8.059
0.0916	8.059
0.1000	8.059
0.1083	8.059
0.1166	8.059
0.1250	8.059
0.1333	8.059
0.1416	8.059
0.1500	8.059
0.1583	8.059
0.1666	8.059
0.1750	8.059
0.1833	8.059
0.1916	8.059
0.2000	8.059
0.2083	8.059
0.2166	8.059
0.2250	8.059
0.2333	8.059
0.2416	8.059
0.2500	8.059
0.2583	8.059
0.2666	8.054
0.2750	8.059
0.2833	8.059
0.2916	8.059
0.3000	8.059
0.3083	8.059
0.3166	8.059
0.3250	8.059
0.3333	8.059
0.3500	8.059
0.3666	8.054
0.3833	8.059
0.4000	8.059
0.4166	8.059

Elapsed Time (min)	Water Level (ft)
0.4333	8.059
0.4500	8.059
0.4666	8.059
0.4833	8.059
0.5000	8.054
0.5166	8.059
0.5333	8.059
0.5500	8.059
0.5666	8.059
0.5833	8.059
0.6000	8.059
0.6166	8.059
0.6333	8.059
0.6500	8.059
0.6666	8.059
0.6833	8.059
0.7000	8.059
0.7166	8.059
0.7333	8.059
0.7500	8.059
0.7666	8.059
0.7833	8.063
0.8000	8.059
0.8166	8.059
0.8333	8.059
0.8500	8.059
0.8666	8.059
0.8833	8.059
0.9000	8.059
0.9166	8.059
0.9333	8.059
0.9500	8.059
0.9666	8.059
0.9833	8.059
1.0000	8.059
1.2000	8.059
1.4000	8.059
1.6000	8.059
1.8000	8.059
2.0000	8.054
2.2000	8.054
2.4000	8.054
2.6000	8.059
2.8000	8.059
3.0000	8.059
3.2000	8.059

Elapsed Time (min)	Water Level (ft)
3.4000	8.059
3.6000	8.063
3.8000	8.063
4.0000	8.068
4.2000	8.073
4.4000	8.077
4.6000	8.077
4.8000	8.077
5.0000	8.087
5.2000	8.087
5.4000	8.092
5.6000	8.096
5.8000	8.096
6.0000	8.101
6.2000	8.106
6.4000	8.111
6.6000	8.111
6.8000	8.115
7.0000	8.120
7.2000	8.125
7.4000	8.130
7.6000	8.134
7.8000	8.139
8.0000	8.144
8.2000	8.148
8.4000	8.153
8.6000	8.158
8.8000	8.163
9.0000	8.167
9.2000	8.167
9.4000	8.172
9.6000	8.177
9.8000	8.182
10.0000	8.186
12.0000	8.229
14.0000	8.267
16.0000	8.300
18.0000	8.328
20.0000	8.342
22.0000	8.376
24.0000	8.394
26.0000	8.399
28.0000	8.423
30.0000	8.432
32.0000	8.442
34.0000	8.461
36.0000	8.465

Elapsed Time (min)	Water Level (ft)
38.0000	8.470
40.0000	8.475
42.0000	8.484
44.0000	8.484
46.0000	8.489
48.0000	8.489
50.0000	8.494
52.0000	8.499
54.0000	8.508
56.0000	8.513
58.0000	8.518
60.0000	8.518
62.0000	8.527
64.0000	8.527
66.0000	8.532
68.0000	8.536
70.0000	8.541
72.0000	8.541
74.0000	8.541
76.0000	8.546
78.0000	8.541
80.0000	8.546
82.0000	8.541
84.0000	8.551
86.0000	8.551
88.0000	8.555
90.0000	8.555
92.0000	8.560
94.0000	8.560
96.0000	8.555
98.0000	8.560
100.000	8.560
120.000	8.617
140.000	8.674
160.000	8.702
180.000	8.711
200.000	8.721
220.000	8.735
240.000	8.773
260.000	8.782
280.000	8.811
300.000	8.834
320.000	8.853
340.000	8.863
360.000	8.868
380.000	8.877
400.000	8.882